

Abstract Of The Disclosure

A method and apparatus for separating molecules. The apparatus includes a substrate having a surface. A film in contact with the surface defines a substrate/film interface. An electrode electrically connected to the film applies a voltage potential between the electrode and the substrate to form a depletion region in the substrate at the substrate/film interface. A photon energy source having an energy level greater than the potential is directed at the depletion region to form electron-hole pairs in the depletion region. At least one of the electron-hole pairs is separated by the potential into an independent electron and an independent hole having opposite charges and move in opposing directions. One of the electron and hole reach the substrate/film interface to create a photopotential in the film causing charged molecules in the film to move in response to the localized photovoltage.

1007633-021502